WESTON SOLUTIONS, INC.
205 CAMPUS DRIVE
EDISON, NEW JERSEY 08837
732-417-5800 • FAX: 732-417-5801

May 23, 2017

Mr. Matthew Turner
Bureau of Inspection and Review
Site Remediation Program
New Jersey Department of Environmental Protection
401-05H
PO Box 420
Trenton, New Jersey 08625-0420

RE: Crows Mill Creek Field Sampling Plan
Hatco Corporation, PI No. G000003943

Dear Mr. Turner,

As a follow up to our meeting on February 21, 2017, Weston Solutions, Inc. (Weston) has prepared the attached Crows Mill Creek Field Sampling Plan. This plan is intended to complete the delineation of bis(2-ethyl hexyl)phthalate in the downstream portion of the creek.

Please contact me if you have any questions or require additional information. We will schedule the sampling event following receipt of NJDEP's approval.

Very truly yours,

WESTON SOLUTIONS, INC.

Jason Schindler
Principal Project Manager

Attachment

Cc: N. Hamill, NJDEP/SRWMP/BEERA
K. Schick, NJDEP/SRWMP/BEERA
M. Fisher, LSRP, ELM Group
R. Landolfi, Woodbridge Township
Law Department, Woodbridge Township
Eric Lange, James P. Nolan & Assoc.
C. Ehrlich, Woodbridge Township
M. Mauro, Excel Environmental
V. Puranapanda, Chubb
A. Kathuria, LBG
S. Jones, Weston
S. Blarr, Weston

680778

Crows Mill Creek Field Sampling Plan
AOC-25 CDG-382 Area
Hatco Site – Fords, New Jersey
May 2017

Background and Rationale

Weston Solutions, Inc. (Weston®) has prepared this Field Sampling Plan (FSP) to refine and confirm the delineation of the southern reach of Crows Mill Creek, upstream of the tide gate, as part of the New Jersey Department of Environmental Protection (NJDEP) requirements associated with AOC-25. NJDEP initially conveyed the results of an Ecological Component Review of the Remedial Investigation Report (Weston, 2016) via memorandum to LSRP Mark Fisher on August 22, 2016. Subsequently, a Technical Consultation was requested with the Department, which was held on February 21, 2017. Attachment 1 provides a copy of the Technical Consultation Memorandum prepared by Mark Fisher on March 9, 2017. This FSP specifically addresses Plan Forward/Action Item No. 3 on page 10 of the memorandum. This FSP is intended to assess the condition of sediment in the vicinity of sample location CDG_382.

Sample location CDG_382 is located in southern portion of Crows Mill Creek on property currently owned by Woodbridge Township (Tax Block 77, Lot 100). The location of the Woodbridge Township property including the southern reach of Crows Mill Creek, upstream of a tide gate, is shown on Figure 1. This figure also shows the results of sediment sampling previously conducted by Weston in this area.

Sediment samples proposed in this FSP will be collected from the Crows Mill Creek stream channel as shown on Figure 2, a focused view of the CDG_382 area on Figure 1. As shown on Figure 2, samples will be collected on the upstream and downstream sides of CDG_382 for additional horizontal delineation. Station CDG_382 will be resampled at deeper depths to vertically delineate the current sample result of 380 mg/kg for BEHP at a depth of 2.5 to 3 feet below the water/sediment interface. GIS coordinates for CDG_382 were recorded during the initial sampling event. A hand held GIS unit capable of sub-meter accuracy will be used to navigate to the original CDG_382 location for the resampling event. Sample station CDG_382 was located in the center of the channel so delineation samples will be collected at the northern and southern channel banks at this location. Sediment samples will be collected from the edges of the channel, below the water line. The distance from CDG_382 to each bank sampling location will be measured in the field with a graduated tape measure and the distance will be added to the sample name, consistent with the nomenclature for the other sampling locations.

A Quality Assurance Project Plan (QAPP), developed in accordance with NJDEP requirements, was submitted as part of Weston's 2009 *Addendum 3 to the Consolidated RAWP (RAWP Addendum 3)*, and provides specific sample collection methodology and laboratory analyses requirements. This FSP supplements the 2009 QAPP. Table 1 summarizes the proposed sampling locations and target depths, analytical parameters, and sampling methods for the samples. Tables 2 through 4 summarize Quality Assurance sample information specific to this sampling event. The FSP assumes that a depth of five feet below the water/sediment interface is achievable using a manual soil corer. If this depth cannot be achieved, the interval above the refusal depth will be submitted for analysis and a note added to the sediment log indicating the refusal depth. In

accordance with the sampling procedure detailed below, up to two attempts will be made at each location to achieve the target depth of five feet.

Sampling Procedures

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, standard chain-of-custody forms will be completed for all samples. Each form will be completed in the field and signed and dated by a member of the field team who will verify the sample shipment. This form will accompany the samples to the laboratory.

Sampling will start at the most downstream locations (in this case CDG_382+100E) and proceed upstream. Samples will be placed in a cooler and chilled with ice, and will be transported to the laboratory.

Reusable sampling equipment, if needed, will be decontaminated prior to use at each sample location and prior to removal from the site. Decontamination procedures will follow technical requirements as set forth in the NJDEP *Field Sampling Procedures Manual* (August, 2005). Equipment will be washed in the following sequence, prescribed in the Field Sampling Procedures Manual Section 2.4.1:

1. Laboratory grade glassware detergent plus tap water wash,
2. Generous tap water rinse,
3. Distilled and deionized (ASTM Type II) water rinse,
4. Acetone (pesticide grade) rinse,
5. Total air dry, and
6. Distilled and deionized (ASTM Type II) water rinse.

The nitric acid rinse steps are omitted because no metals analysis will be required for this Sampling Plan.

Sediment Sample Collection

Weston will utilize Aqua Survey, Inc., a contractor specializing in waterway sampling, to obtain sediment cores. Sampling personnel will clear as small a path as possible through the phragmites using manual tools and bring equipment from an access point to the sampling area. The access point to Crows Mill Creek will be via the Woodbridge Township shooting range (a raised cleared area with parking - visible on figures to the northeast of the sampling area). From the nearest cleared area at the shooting range, personnel will travel southwesterly approximately 160 feet through the phragmites to the most downstream sampling point, CDG-382+100 (Figure 2). Sampling will proceed upstream.

Sampling tools will include steel core barrels, slambar equipment, and GPS positioning equipment. Cores will be retrieved using a 3-inch diameter steel barrel fitted with a dedicated disposable polyethylene core liner. The barrel will be driven manually using the slambar and extracted manually by pulling with the assistance of a jack system as needed. The maximum planned sampling depth will be five feet below the water/sediment interface or refusal if a depth of five feet cannot be reached via this sampling method. The original sample to be vertically delineated, CDG_382, was collected at a depth of 2.5 to 3 feet below the sediment surface.

To provide a stable work area at each sampling location, either a plywood platform or a platform made of two Jon boats secured together will be set up at the location. The plywood will form a stable base from which to advance and retrieve cores from near-bank locations whereas the Jon boats will provide a work platform for channel center locations. Use of either system will be at the discretion of the sampling team.

The following process will be utilized at each sample location to retrieve cores and collect sediment samples for laboratory analysis:

- Where sediment is submerged, depth to top of sediment will be determined using either a ruler (for shallow water) or a weighted disc attached to a measuring line (for deeper water). If used, the weighted disc will be gently lowered to the top of sediment; the distance from the top of sediment to the water surface will be recorded.

- Samples will be collected utilizing the 3-inch steel core barrel fitted with a polyethylene core liner described above. A core catcher will be used to retain the sample during extraction. Once the barrel is set into the top of sediment, field personnel will advance the sampler using the slidehammer until the target depth or refusal is met.

- The sampler will record the total depth to which the core barrel was driven below the top of sediment.

- Retrieval will be performed manually; the barrel will be slowly loosened from the subsurface, utilizing the slambar and/or jack if necessary.

- The recovered sediment sample will be maintained in a vertical position. The transparent polyethylene liner will be removed from the core barrel and examined for sample recovery. The total length of sample material will be measured and recorded. If the sample cannot be processed immediately, the ends of the liner will be capped.

- If the upper portion of the sediment sample is primarily liquid, small holes (e.g., 1/16-inch diameter) will be drilled through the liner to allow excess water to drain. If no evidence of contamination is present the water will be allowed to drain to the ground surface adjacent to the stream (material which appears impacted will be retained and managed as investigation derived waste according to the procedure discussed below). The sample will be allowed to drain sufficiently for handling in the field. Once the field team has determined that sufficient water has drained from the material the length of recovery will be measured again and recorded.

- The liner containing the recovered sample will be placed horizontally and cut open lengthwise to expose the sample material.

- The sample lithology will be described. Sample intervals will be selected based on the original, undrained recorded length of the sample core. For example, if the original undrained recovered core length was 3.5 feet, then the deepest 0.5-foot interval available for sampling will be identified as 3.0 to 3.5 feet below the top of sediment regardless of the final drained sample length. Compression will be calculated based on the thickness of

the soft sediment layer, if present. Samples will be collected from the intervals specified on Table 1 unless refusal occurs prior to the target depth.

- For cases where the sediment recovered in the core exceeds the amount required for laboratory analysis (50 grams, to be transported in a 4-oz jar), the sample will be placed in a stainless steel bowl and homogenized using a stainless steel spatula prior to containerizing the sample for laboratory analysis. The bowl and spatula will be decontaminated prior to each use and the decontamination fluids retained for disposal following the sampling event.

- If the target depth is not reached due to refusal or sample loss, a second core will be attempted 2 to 5 feet upstream of, the original core location. If a second attempt does not achieve the targeted sampling depth, the sample will be collected from the maximum depth achieved.

The location of each sample will be recorded using GPS equipment capable of sub-meter accuracy.

Laboratory Analysis

Samples shown on Table 1 will be collected in one field mobilization and will be submitted to Test America, an NJDEP-certified analytical laboratory (NELAP #12028) for analysis for BEHP via Method SW849-8270C. The samples will be analyzed using a standard turnaround time. Weston will provide Test America with a copy of a Project Communication Form (Attachment 2; based on the NJDEP's Data of Known Quality Protocol Technical Guidance, Version 1.0, April 2014) to ensure that the laboratory is aware of the method detection limits and level of accuracy required for this project.

Quality Assurance and Quality Control

The sediment samples will be accompanied by quality control samples to include laboratory-blind field duplicate(s), a field blank generated by pouring laboratory provided analyte-free water through a new polyethylene sampler prior to use, and samples for site-specific matrix spike and matrix spike duplicate samples to be used for batch-level quality assurance/quality control (QA/QC) assessment.

QA/QC samples will be collected in accordance with Weston's QAPP included as part of *RAWP Addendum 3*. Laboratory-blind field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples will be collected at a rate of 1 per 20 samples per analytical parameter. Field blanks will be collected once per day per matrix and analyzed for the same parameters as the field samples. Tables 2 through 4 show these samples.

Attachment 3 provides the QA/QC criteria to be applied to laboratory method blanks, laboratory control samples and duplicates, MS/MSD recoveries, surrogate recoveries, holding times, field blanks and sampling equipment blanks. The Data Usability Assessment will be based on the limits shown on the tables in Attachment 3; these tables are from the Data of Known Quality Protocols Technical Guidance cited above. Attachment 4 is Test America's Quality Assurance program documentation.

A record of all field procedures, tests and observations will be recorded in a field logbook and in Weston's electronic field log program. Entries in the log book will include the names of the individuals participating in the field effort, date and time, and the initials of the individual responsible for recording the observations.

Investigation-Derived Waste Management

Excess sediment recovered that exhibits no evidence of contamination will be placed back into the boreholes, if practicable. Excess sediment that cannot be returned to the original sample location or sediment that exhibits evidence of contamination will be transported to the Hatco Site for management with other solid waste. Spent decontamination waters will be applied to the ground surface and allowed to percolate in accordance with section 2.4.5.7 of the Field Sampling Procedures Manual. Other investigation-derived waste generated during sampling activities, including used personal protective equipment and disposable sampling equipment, will be placed into trash bags and transported to the Hatco Site for management with other non-hazardous waste associated with this project. Investigative-derived waste for offsite disposal from the Hatco site will be containerized in 55-gallon drums or other DOT-approved containers and handled in accordance with applicable Federal and State requirements.

Attachments:

Figure 1: February 2014 BEHP Results For Block 77, Lot 100
Figure 2: Proposed Sampling Plan, Crows Mill Creek Area Around CDG_382

Table 1: Crows Mill Creek Sampling Plan for CDG_382 Area
Table 2: Quality Control Samples
Table 3: Sample Storage, Preservation and Analytical Methods
Table 4: Summary of Total Samples to be Collected in this Program

Attachment 1: March 9, 2017 Memorandum of Meeting with NJDEP Bureau of Environmental Evaluation and Risk Assessment
Attachment 2: Project Communication Form
Attachment 3: QAPP Worksheet All Matrices – SVOAs by USEPA SW-846 8270C (NJDEP)
Attachment 4: Test America QA Documentation

FIGURES

NOTES:
1. All results mg/kg (milligram per kilogram).
2. J - Estimated Value.
3. U - Undetected Value.
4. All sample depths are in feet below ground surface.
5. BEHP - Bis(2)ethylhexyl phthalate.
6. Sediment results displayed in green result box.

SOURCES:
1. Base Map: New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID MG4 Tiles. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/IW.jsp.
2. Parcel Boundaries: Parcels of Woodbridge Township, Middlesex County, New Jersey State Plane NAD83. Woodbridge Township Information Services. October 2009. https://njgin.state.nj.us/NJ_NJGINExplorer/DataDownloads.jsp

Legend

- Sediment Sample Location With Total BEHP results in mg/kg
- Tidal Gate
- Approximate Property Boundary

LEGEND: 100 50 0 100
Graphic Scale in Feet

TITLE: FEBRUARY 2014 BEHP RESULTS FOR BLOCK 77, LOT 100

PROJECT: Hatco Remediation

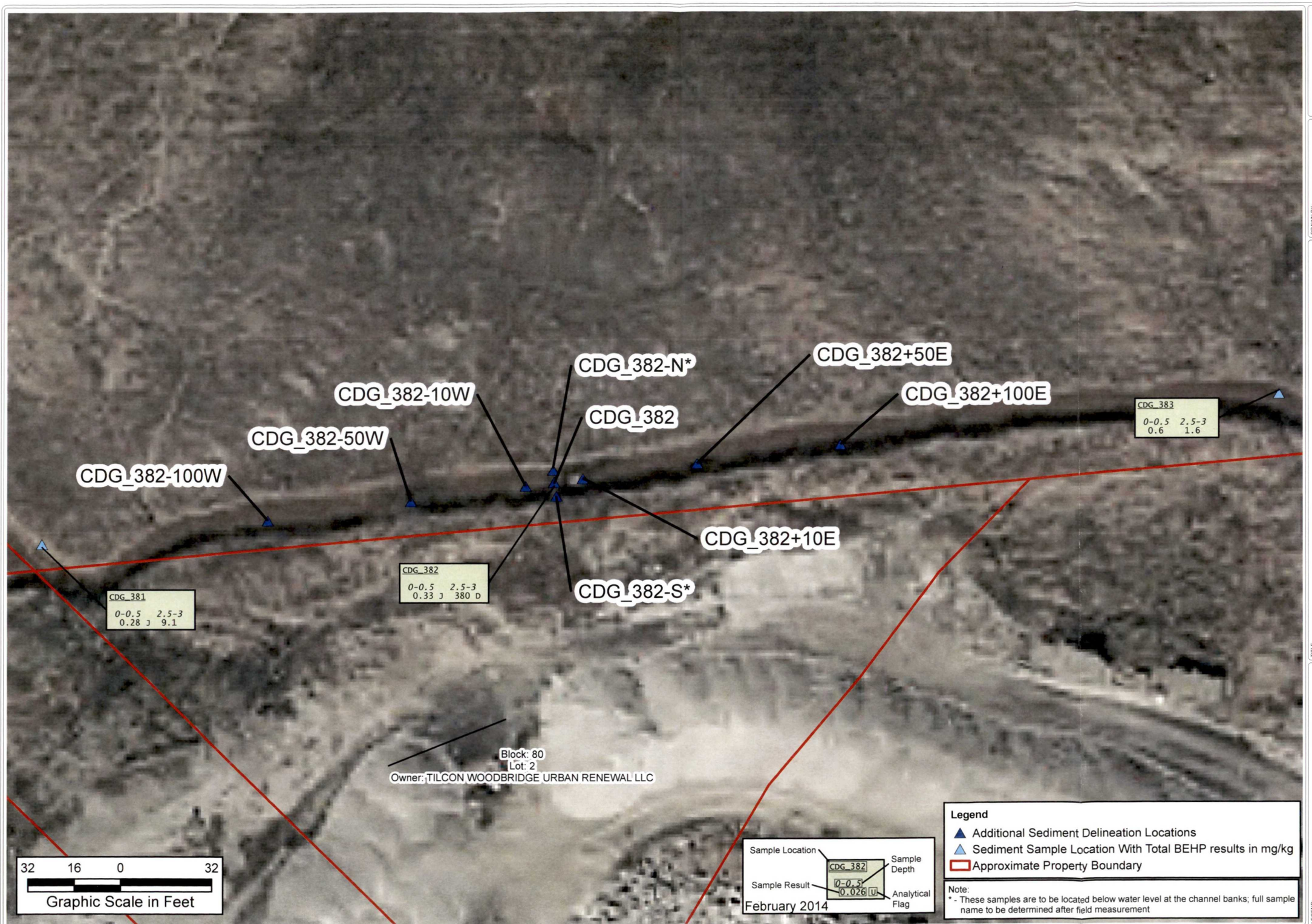
CLIENT NAME: Hatco Corporation

WESTON SOLUTIONS SM

DATE: 5/10/2017

FIGURE #: 1

P:\Hatco\GIS\MXD\2017_04_Ch_D_LSRP\19951_Hatco_CD_Tot_BEHPs_Southern.mxd



P:\Hatco\GIS\MXD\2017_04_Ch_D_LSRP\19952_Hatco_CD_Prop_Samp.mxd

DRAWN BY: S. Poultney
REVIEWED BY: A. McGahan
PROJECT MANAGER: J. Schindler
SCALE: 1 " = 32 '
DATE: 5/10/2017

TITLE: PROPOSED SAMPLING PLAN
CROWS MILL CREEK
AREA AROUND CDG_382

FIGURE #: 2

DRAWING NUMBER: see path at left edge

WESTON SOLUTIONS

LEGEND:

PROJECT: Hatco Remediation

CLIENT NAME: Hatco Corporation

TABLES

Table 1. Crows Mill Creek Sampling Plan for CDG_382 Area
Hatco Remediation
Fords, New Jersey

Station Group	Station	Station type	Target Easting	Target Northing	Est. Total Depth (ft bgs)	Sample Identification	Sample Matrix	Sample Method	Target Sample Depth (ft bgs)	Sample Objectives	Parameters
AOC-25	CDG_382	Subsurface Sediment Sample	543828.514	611477.823	5	CDG_382-G-H-0-[DATE] and 382-G-H-1-[DATE]	Sediment	Soil Corer & Slam Bar	3.0-3.5	Vertical delineation of sample CDG-382-F-G-0 and Field Duplicate	BEHP
		Subsurface Sediment Sample			5	CDG_382-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineation	BEHP
		Subsurface Sediment Sample			5	CDG_382-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineation	BEHP
AOC-25	CDG_382-N*	Subsurface Sediment Sample	*	*	5	CDG_382-N-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation east of sample CDG-382+10 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382-N-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382-N-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382-S*	Subsurface Sediment Sample	*	*	5	CDG_382-S-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation east of sample CDG-382+10 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382-S-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382-S-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382-10W	Subsurface Sediment Sample	543818.6025	611476.4934	5	CDG_382-10W-F-G-0-[DATE] and MSMSD2-1-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation west (upsgream) of sample CDG-382 for BEHP and MS/MSD sample	BEHP
		Subsurface Sediment Sample			5	CDG_382-10W-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382-10W-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382+10E	Subsurface Sediment Sample	543838.425	611479.1521	5	CDG_382+10E-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation east (downstream) of sample CDG-382 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382+10E-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382+10E-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382-50W	Subsurface Sediment Sample	543778.9575	611471.1759	5	CDG_382-50W-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation west (upstream) of sample CDG-382-10 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382-50W-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382-50W-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382+50E	Subsurface Sediment Sample	543878.0699	611484.4696	5	CDG_382+50E-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation east (downstream) of sample CDG-382-10 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382+50E-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382+50E-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382-100W	Subsurface Sediment Sample	543729.4013	611464.529	5	CDG_382-100W-F-G-0-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation west (upstream) of sample CDG-382+50 for BEHP	BEHP
		Subsurface Sediment Sample			5	CDG_382-100W-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382-100W-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP
AOC-25	CDG_382+100E	Subsurface Sediment Sample	543927.6262	611491.1165	5	CDG_382+100E-F-G-0-[DATE] and MSMSD1-1-[DATE]	Sediment	Soil Corer & Slam Bar	2.5-3.0	Lateral delineation east (downstream) of sample CDG-382-50 for BEHP and MS/MSD Sample	BEHP
		Subsurface Sediment Sample			5	CDG_382+100E-H-I-0-[DATE]	Sediment		3.5-4.0	Vertical delineaton	BEHP
		Subsurface Sediment Sample			5	CDG_382+100E-J-K-0-[DATE]	Sediment		4.5-5.0	Vertical delineaton	BEHP

* Exact location of these samples will be based on the channel width measured in the field. The distance from this sample to CDG-382 will be measured and added to the sample name. as noted in the text.

Total Analytical Samples to be generated: 21 samples

Notes

Analysis for BEHP allows: 14 days to extraction; 40 days from extraction to analysis

Quality Assurance Tables
Crows Mill Creek Sampling; CDG_382 Area
Hatco Remediation
Fords, New Jersey

Table 2: Quality Control Samples			
QA/QC Samples	**Type of Sample**	**Number**	**Analysis**
--	Trip Blank	Not Required	None
FB1-1-[DATE]	Field Blank (1 per day)	2	BEHP
As Noted on Table 1	Field Duplicate (1 per batch of 20 samples)	2	BEHP
MSMSD1-1-[DATE]	MS/MSD (1 per batch of 20 samples)	2	BEHP

Notes

The Remedial Action Work Plan (RAWP), Addendum 3 (Weston, 2009) specifies that Matrix Spike/Matrix Spike Duplicate samples will be prepared and analyzed at a rate of 1 per 20 analytical samples OR every 14 days, whichever is first.

According to the RAWP, Addendum 3, field blanks are to be prepared at a rate of 10% of the samples collected or a maximum of one per day for non-aqueous samples.

According to the RAWP, Addendum 3, field duplicates are to be submitted at a rate of 5% or a minimum of one per type of sample.

Table 3: Sample Storage, Preservation and Analytical Methods					
Parameters	**Matrix**	**Preparation/ Analysis**	**Sample Container**	**Preservation**	**Holding Time**
BEHP	sediment	SW-846 Method 8270C	4 oz glass	Cool to 4°C	14 days to extraction; 40 days from extraction to analysis

Notes: BEHP - bis(2-ethylhexyl)phthalate

Table 4: Summary of Total Samples to be Collected in this Program					
Analytical Parameter	**Investigation Samples**	**No. of Field Duplicate**	**No. of MS/MSD**	**No. of Field Blank**	**Estimated No. of Total Samples**
BEHP	21	2	2	2	27

ATTACHMENT 1

THE ELM GROUP

345 WALL STREET | RESEARCH PARK | PRINCETON NJ 08540
TEL 609.683.4848 FAX 609.683.0129
WWW.EXPLOREELM.COM

MEMORANDUM

TO: **Kevin Schick, Bureau Chief**
NJDEP, Bureau of Environmental Evaluation and Risk Assessment

FROM: **Mark D. Fisher, CHMM, LSRP**
The ELM Group, Inc.

DATE: **March 9, 2017**

RE: **Summary of NJDEP Technical Consultation Meeting - February 21, 2017**
Regarding the Hatco Corporation Remediation Project
Fords, Middlesex County, New Jersey
NJDEP PI#G000003943

A meeting pertaining to the Hatco Remediation Project was held on February 21, 2017, at the New Jersey Department of Environmental Protection (NJDEP) office in Trenton, NJ. The meeting attendees were as follows:

- Kevin Schick, Bureau Chief, NJDEP/SRWMP/BEERA
- Nancy Hamill, Eco Assessment Technical Coordinator, NJDEP/SRWMP/BEERA
- Matthew Turner, Supervisor, NJDEP/BIR
- Myrna Campion, Acting Bureau Chief, NJDEP/BIR
- Susan Schulz, Supervisor, Toxics Section, United States Environmental Protection Agency (USEPA)
- James Haklar, Environmental Engineer, USEPA
- Mark Fisher, President, LSRP, The ELM Group, Inc. (ELM)
- Jason Schindler, Project Manager, Weston Solutions, Inc. (Weston)
- Sally Jones, Vice President, Weston
- Steve Blarr, Director ERM, Weston
- Coleen Devorak, Project Assistant, Weston

Licensed Site Remediation Professional (LSRP) Mark Fisher and Weston previously received comments from NJDEP on the ecological components of the Remedial Investigation Report (RIR) for the Hatco Site, dated May 7, 2016. NJDEP comments were presented in an undated memorandum from Nancy Hamill to Matthew Turner and Gerald Hahn of the Bureau of Inspection and Review. On November 9, 2016, Weston and the LSRP of Record for the site

provided a letter responding to each comment. This meeting was requested by the LSRP and Weston to discuss the responses provided to NJDEP and identify any outstanding issues or concerns.

MEETING SUMMARY:

1. The meeting commenced with Kevin Schick (NJDEP) providing a summary of the technical consultation meeting that occurred in 2015, in which a proposed methodology regarding the derivation of a site-specific risk-based sediment remediation goal for bis(2-ethylhexyl)phthalate (BEHP) in Woodbridge Pond sediments for the Hatco remediation project was discussed. Schick stated the meeting took place two years ago and he was under the impression that the remediation would have been completed by now.

2. Susan Schulz (USEPA) asked what deadlines are being followed for this project. Fisher responded that the project is following the Remediation Timeframes under the LSRP Program. The RIR deadline was May 7, 2016, and the Remedial Action Completion deadline is May 7, 2021.

3. Jason Schindler (Weston) distributed a meeting agenda and provided a brief overview of the Hatco Environmental Liability Transfer Project: Weston assumed liability for Hatco releases prior to November 4, 2002; the project is currently in the Remedial Action (RA) phase; and the RIR submitted on May 7, 2016 was intended to fulfill the regulatory obligation. Schindler stated that considerable remediation work has progressed at the site; in the last 1 to 2 years Weston has spent approximately $10 million during on-site remediation. Approximately 11,000 tons of contaminated soil have been shipped offsite for disposal; portions of the engineered cap have been installed; and a cut-off wall and recovery trench system have been completed to fully contain the inaccessible Light Non-Aqueous Phase Liquid (LNAPL) that remains beneath the active chemical plant. With regard to the delay in the Woodbridge Pond remediation, Schindler noted that Weston and the property owner, Woodbridge Township, had a misunderstanding regarding the remediation approach. While Woodbridge and Weston are now in agreement with regard to the approach, the effort to resolve and obtain agreement on the remedial strategy for the Pond was protracted.

WOODBRIDGE POND REMEDIATION PLAN

4. Weston has recently received approval from Woodbridge Township on the revised remediation approach for Woodbridge Pond. Weston is finalizing the Conceptual Remediation Plan, and will be sharing the conceptual plan with regulators within the next

two weeks. The document is expected to be limited to approximately three pages of text and a map showing the extent of planned remediation.

5. James Haklar (USEPA) asked Schindler why Weston has chosen to circulate a conceptual plan instead of a Remedial Action Workplan (RAWP) Addendum. Schindler explained that the purpose of the conceptual plan is to ensure that the stakeholders are in general agreement regarding the remediation approach before a great deal of time and effort is spent preparing and reviewing the RAWP Addendum. Weston would like to provide a work plan that does not require significant modification before it is finalized. This will also allow Weston to begin the required permit applications now rather than awaiting comments on the full work plan. Once regulatory comments on the concept plan are received, the RAWP Addendum No. 4 will be prepared by Weston, certified by the LSRP of Record (Fisher) and will be submitted to USEPA and NJDEP.

6. Schindler stated that remediation will entail removal of sediments containing polychlorinated biphenyl (PCB) concentrations greater than 1 mg/kg and bis(2-ethylhexyl)phthalate (BEHP) greater than 22 mg/kg. Weston plans to conduct this remediation as a wet dredge. The pond will not be dewatered; based on current hydrogeological data, the pond appears to be a groundwater discharge area and dewatering would be impracticable. There is no room on the Woodbridge Pond property for construction support and staging areas. Therefore, Weston plans to establish support areas on the former Hatco site, currently owned and operated by Chemtura. Dredged sediments will be pumped as a slurry to a dewatering system that will be located on Chemtura's property. Water will be treated and discharged back to the pond in accordance with the pending discharge to surface water permit. A portion of the sediments will be reused in the Former Lagoon Area (prior to final capping of this area) and the remainder will be disposed offsite at an approved disposal facility. Site and wetland areas will be restored in accordance with permit requirements.

7. Haklar inquired why the on-site work is dependent upon the offsite work, referring to the capping of the Former Lagoon. Schindler explained that there is no room to work on the Woodbridge Pond parcel therefore construction support activity will take place on Chemtura property and a portion of the dredged sediments will be reused in the Former Lagoon Area before the final cap is installed.

8. Nancy Hamill (NJDEP) stated that based on information in the RIR, the delineation on Woodbridge Pond property does not appear to be complete. She questioned the delineation of contaminated sediment in the northeastern portion of the pond. Schindler explained that

while Weston did not obtain uncontaminated samples in this direction, Weston assumes that the contaminated sediments extend to the limit of the pond in this direction. Hamill questioned whether the area outside of the pond may have been contaminated by overland flow. Schindler presented a figure depicting Woodbridge Pond and Channels A, B and C, and explained that Channels A, B and C have been previously remediated and there is no pathway for contamination to enter the eastern side of the pond. In addition, Weston will propose additional pre-design samples in this area to ensure that the limits of contaminated sediment are defined before dredging begins. If additional step-out samples are needed Weston will collect them at that time (pre-design). However, Weston believes that delineation is complete for purposes of the remedial investigation and design of the remedial action.

9. Hamill explained to Haklar that NJDEP had previously agreed to a site-specific remediation standard of 22 mg/kg for BEHP in the Woodbridge Pond sediment, and asked if that was acceptable by USEPA. Haklar stated that USEPA is focused on PCBs and will defer to NJDEP for the BEHP goal. Haklar asked if 1 mg/kg remediation standard for PCBs is acceptable by NJDEP. NJDEP confirmed their acceptance of the risk-based remediation approval that includes this cleanup goal.

10. Hamill identified an erroneous statement in Weston's response to comments (RTC), on page 5, paragraph 1: "As discussed during the technical consultation meeting on March 6, 2015, it was our understanding that NJDEP agreed with the position that the current Ecological Screening Level of 0.75 mg/kg was based on a flawed study from Washington State and that it would be appropriate to adopt Washington State's current screening level of 22 mg/kg as a reasonable alternative for purposes of delineation." This statement should be replaced with the following text, previously included as part of the memorandum from the referenced technical consultation: "The Technical Consultation meeting on March 6, 2015 included a discussion of the NJ Ecological Screening Criteria (ESC) for BEHP and its derivation from the NOAA Screening Quick Reference Tables (SQuiRTs) by the State of Washington. Weston's specialty consultant, Windward Environmental (Windward) stated that the NJ ESC for BEHP in sediments (0.75 mg/kg) was derived from an evaluation that has since been disproven. Windward discussed their review of literature on the toxicity of BEHP and found No Observed Effect Concentration (NOEC) were identified at much higher concentrations than the current ESC set forth by NJDEP. NJDEP agreed that it would be appropriate to adopt Washington State's current screening level of 22 mg/kg as a reasonable alternative for purposes of delineation."

ECOLOGICAL RISK ASSESSMENT (FOR BEHP IN CHANNEL D)

11. Hamill asked if Weston is planning to perform a full ecological risk assessment, acknowledging that it can be a lengthy process, considering the May 2021 deadline. Hamill stated that an ecological risk assessment should be submitted as part of the RIR, but nothing regarding ecological toxicity had been provided in the RIR. Schick concurred that a Risk Assessment is typically required with the Remedial Investigation (RI). Fisher clarified that the work on-site is nearing completion with only the site-wide capping remaining, and that the Risk Assessment should apply to the offsite areas only. Hamill and Schick agreed that the need for a risk assessment applied to the offsite areas of concern. Schick stated that this is one of the top level of cases with environmental issues for the Agency and that given the long history and complexity of this site, it would be acceptable for the risk assessment to be completed at this time (after the submission of the May 2016 RIR and prior to any remedy evaluation for this offsite area).

12. Hamill stated the 22 mg/kg ESC for BEHP may be applied for sediment in areas that remain inundated by water, but for other areas, the current default ESC is 0.925 mg/kg. Hamill asked if BEHP is delineated to that criterion. Schindler explained that during the investigation of the offsite areas, it was assumed that PCBs and BEHP were within the same area. However, it appears that the PCB and BEHP footprints are not the same with BEHP extending further south than the PCBs. Schindler noted that the project is already in the RA phase and stated that Weston would incorporate the Risk Assessment into the Remedial Design for the offsite area. Sally Jones (Weston) clarified that the Risk Assessment applies to BEHP only, not PCBs. PCB remediation goals were already established with the March 2005 risk-based PCB disposal approval letter issued by NJDEP.

CHANNEL D POTENTIALLY RESPONSIBLE PARTIES

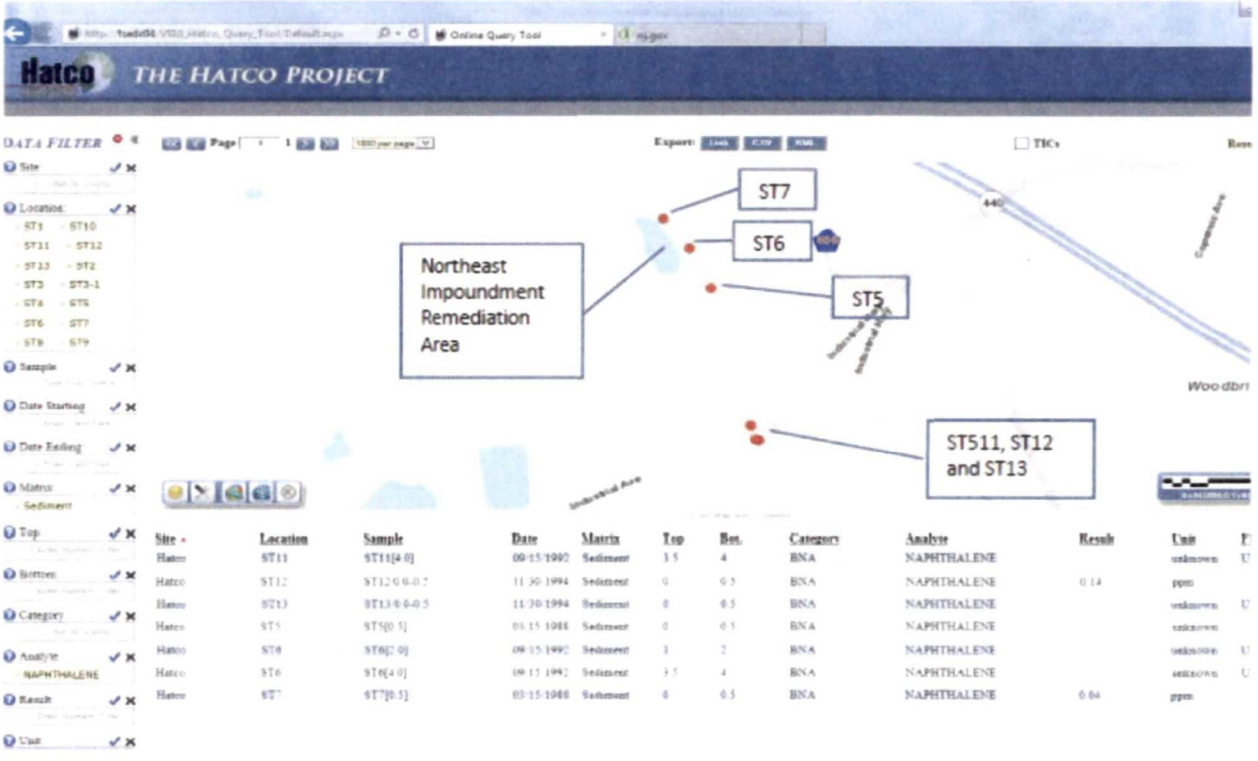
13. Schindler presented a map of AOC 25 and explained that Channel D is only a small part of AOC 25. AOC 25 covers an offsite area that is currently owned by multiple entities: EPEC Polymers (formerly Nuodex), GreDel, ConRail and Woodbridge Township. Weston noted that the distribution of contamination observed in AOC 25 beyond Channel D suggests additional source areas. Schick stated that Weston can pursue distribution/potential additional responsible parties separately. Weston will provide an update within the next two months.

SLINGTAIL CREEK

14. Hamill said she did not understand Weston's response to the Slingtail Creek comment. NJDEP stated that the historical sample data do not adequately characterize the sediment in Slingtail Creek and requested additional sample collection. NJDEP is concerned that the historical records indicate naphthalene releases in this area (proximate to the Creek) and not all of the sediment samples were analyzed for this parameter. Weston noted that under its remediation agreement with NJDEP, the RIR only addresses contamination from releases prior to November 2002. Naphthalene contamination in this area and releases to Slingtail Creek were associated with the phthalic anhydride plant operations. That plant was taken out of service in the 1970s. Dan Raviv Associates, Inc. (DRAI), conducted remediation in this area (phthalic anhydride plant) in the late 1980s and early 1990s on behalf of W.R. Grace (Grace). The sediment samples used to characterize the sediments in the creek were collected at that time. The work was subsequently halted due to a financial dispute between DRAI and Grace, and therefore the large excavation in the area of the phthalic anhydride plant was never backfilled. Runoff accumulated in the open excavation forming the Northeast Impoundment. Weston recently completed the removal of naphthalene-contaminated material from this area and backfilled the Northeast Impoundment with certified clean fill material; that work will be reported separately in a Remedial Action Progress Report. Weston explained that the samples collected by DRAI in the Creek to document conditions reflect conditions during the timeframe subject to the remediation agreement (i.e. prior to November 2002). No on-site releases were documented in this area or suggested by facility operations after the remediation of the area by DRAI. Weston is concerned that sediments in the creek could likely contain contamination associated only with urban runoff from upstream locations. Further sampling of the sediments would serve no purpose other than documenting current sediment conditions resulting from urban runoff, which are not the responsibility of Weston under the remediation agreement. NJDEP reiterated its concern that since not all of the sediment samples were analyzed for the full list of parameters that certain contaminants may have been missed. Fisher noted that the historical sampling had been performed under plans reviewed and approved by the agency and reflected the best understanding of appropriate sampling at the time. He suggested that Weston could review the existing data and, if the historical sediment samples near the remediation area were not analyzed for naphthalene then Weston would provide recommendations for further sampling of that area. NJDEP agreed that this approach would be appropriate and that the results of the evaluation and recommendations should be presented in this memorandum.

Following the NJDEP meeting, Weston reviewed the historical data. Sediment samples were collected by DRAI between 1988 and 1994 from 13 locations within Slingtail Creek.

Sediment samples from six locations were analyzed for base neutral/acid extractable organic compounds including naphthalene. These included the three locations immediately adjacent to the Northeast Impoundment, which was the location of the waste from the former phthalic anhydride operations (Locations ST5, ST6 and ST7) as well as three locations where the stream leaves the site. Concentrations ranged from below the method detection limit at four of the six locations to 0.14 mg/kg. All of these results are less than the ESC of 0.176 mg/kg. Based on the locations and concentrations previously reported to NJDEP, Weston recommends no further investigation of this area. The image below shows the locations of the six samples along Slingtail Creek relative to the Northeast Impoundment remediation area. Detailed information regarding these samples were presented in the RIR.



RARITAN RIVER

15. Hamill asked Weston to take samples in the lower 1,000 feet of Crows Mill Creek just above the Raritan River. Schindler stated that Weston believes that the downstream extents of BEHP and PCB contamination have been delineated, upstream of the aforementioned area. Sampling in the lower portion of Crows Mill Creek, beyond the delineated area, would likely identify similar contaminants from other industrial sources. In this area, industrial properties border the lower reach of the Creek, including Tilcon and Bayshore Recycling, and there is

an industrial landfill associated with the former Union Carbine site, now Praxair, immediately upstream of this area. Schick noted that phthalates are a concern for recycling centers.

16. Schick stated that Weston needs to make a more compelling argument to demonstrate that BEHP from the Hatco site is delineated. Schindler noted that in Weston's response to comments, Weston proposed additional focused sampling to assess what appears to be an isolated BEHP exceedance in the stream channel upstream of Weston's final delineation locations. Weston will provide a map and concise sampling plan under separate cover.

LNAPL AREA IN CHANNEL D

17. Hamill asked Schindler to explain the "LNAPL Area" in Channel D. Schindler identified the location of the tarry area on a figure, identified in the RIR as EPEC AOC-4. This area appears to be historical surface spillage from the railroad track area. While sampling of the tarry material identified both PCBs and BEHP (among other contaminants), the area is not tied to any current or historical drainage from the Hatco site. The "LNAPL Area" identified on previous maps is located west of EPEC AOC-4 and Weston has not identified a connection between this area and the Hatco site. Historical aerial photographs show evidence of disturbance in this area beginning in the early 1950s, separate from Hatco's operations and drainage. The disturbance appears to expand southward through the following decades to cover what was later described as the "LNAPL Area." The RIR identifies this as AOC 25b (and not the responsibility of Hatco), separate from AOC 25a, which includes Channel D and the historical Crows Mill Creek channel that received drainage from Hatco. This separation of AOC 25b from any potential Hatco contribution is supported by a historical aerial photograph from 1979 that shows the surface water flow pathway based on placement of sorbent booms in Crows Mill Creek following a documented release from the Hatco site. Based on the placement of the booms, surface water flow at that time was down Channel D to the historical Crows Mill Creek channel along the eastern portion of AOC-25 (AOC-25a) with no direct pathway or connection to AOC-25b. Hamill said that the LNAPL area and tarry material remain an open issue and a source. Fisher noted that the burden of proof to establish an offsite source is on the property owner of AOC-25b (not Hatco).

WOODBRIDGE POND PERMITS

18. Haklar asked Schick how long the permitting process for Woodbridge Pond would take. Schick replied that NJDEP could expedite the review process. Weston will submit a list of required permits with the Woodbridge Pond Remediation Conceptual Plan and will work

with Matt Turner (NJDEP) when scheduling the permit pre-application meeting to expedite NJDEP approval to the extent possible.

19. Hamill asked if the fish will be euthanized and if the turtles can be relocated. The fish and amphibians will be addressed in accordance with the permit requirements. It is expected that all will be euthanized and removed as solid waste due to PCB contamination.

20. Schultz stated that according to a study, the wetlands surrounding Woodbridge Pond are considered a Pinelands Outlier and asked what Weston is going to do to protect it. Schindler reiterated that Weston will limit the disturbance and damage to the wetlands on the Woodbridge Pond property by using the Chemtura property as a construction laydown area. The wetlands will be restored in accordance with the required permits to be obtained from NJDEP.

FORMER LAGOON CAP

21. Haklar expressed concern with Weston's use of SoilTac on top of the Former Lagoon Area, instead of using tarps to cover the exposed soil. Schindler explained that the tarps previously used to cover the soil could not be anchored sufficiently to prevent movement and exposure. SoilTac is a dust control agent that is designed to stabilize the soil. This prevents dust and limits runoff. A berm surrounds the Former Lagoon Area which prevents runoff from escaping. This combination is a significant improvement to the limited cover previously provided by the tarps. Haklar noted that the 2 acres which comprise the Former Lagoon are exposed contaminated soil and should have been capped already and requested further information on the SoilTac material. Schindler noted that the Former Lagoon Area was included in the previously approved remediation plans for the site as a soil reuse area. That work is nearly complete and will be finished with the Woodbridge Pond remediation. Weston will provide documentation of the SoilTac and inspections to Haklar. The Former Lagoon Area will be capped in accordance with the previously-approved plans once the sediment from Woodbridge Pond has been placed on it.

PLAN FORWARD/ACTION ITEMS

1. An ecological risk assessment will be prepared for BEHP as part of the remedial design for Channel D. The risk assessment will be completed as part of the remedial action phase and within the current NJDEP Remedial Action Timeframe for the site of May 2021.

2. Weston will provide a conceptual work plan (i.e., several pages and a figure) to NJDEP and USEPA in the next several weeks for Woodbridge Pond. Weston will include the list of permits with the plan and will work through Turner for the pre-application meeting.

3. Weston will provide a sampling plan to refine the BEHP delineation in Crows Mill Creek sediment in the vicinity of sample location CDG_382 upstream from the tidegate. The plan will be provided within the next 90 days contingent upon concurrence by the property owners

4. As part of the sampling plan, Weston will provide a map showing the ownership, operations and land uses identified in this area including the landfill and recycling center.

5. Weston will provide a concise summary of the recent remediation efforts completed at the Hatco site with the sampling plan and in the upcoming remedial action progress report for the Southeast Leg remediation.

6. Weston will provide USEPA with information on SoilTac and its application as a temporary stabilizing agent for reused soil in the Former Lagoon Area.

NJDEP recommended further evaluation to develop additional lines of evidence that the LNAPL Area adjacent to the EPEC site is not the responsibility of Hatco. This issue will be addressed prior to the remedial action report. Weston will likely contact NJDEP to discuss this issue in a future Technical Consultation Meeting.

ATTACHMENT 2

EXAMPLE: PROJECT COMMUNICATION FORM

Client Name:

Project Name: ***Project Number:***

Project Manager: ***Contact info:***

Field Manager:

***Sample Matrix*:** ☐ Ground Water ☐ Surface water ☐ Soil ☐ Sediment ☐ Drinking water

☐ Air (☐ Indoor ☐ Sub-slab ☐ Ambient)

☐ Other.

DKQP Analyses/Methods:

☐ VOC 8260B ☐ VOC 8260C ☐ Aromatics 8260B ☐ Aromatics 8260C

☐ Halocarbons 8260 ☐ Pesticides 8081A ☐ Pesticides 8081B

☐ PCBs 8082 ☐ PCBs 8082A ☐ PAH 8270C ☐ PAH 8270D

☐ SVOC 8270C ☐ SVOC 8270D ☐ 524.2 ☐ TO-15 ☐ LLTO-15

☐ TO-17 ☐ NJDEP EPH

☐ 6010B Metals ☐ 6010C Metals ☐ 6020 Metals ☐ 6020A Metals

☐Total CN 9010C ☐ Total CN 9013 ☐ Total CN 9014 ☐ Total CN 9012B

☐ Hex Chrome 7196A ☐ Hex Chrome 7199

☐ Mercury 7471B ☐ Mercury 7470A

☐Other tests: _____

_____.

TAT Required: Standard: Other:

Constituents of Concern: Please *note any known or suspected contaminants in high concentrations or any non-standard analytes not contained in routine target lists (see notes).*

Regulatory Criteria:

☐ Soil Remediation Standards (Residential Direct Contact);

☐ Soil Remediation Standards (Nonresidential Direct Contact);

☐ Default Impact to Ground Water Soil Screening Levels;

☐ Default Leachate Criteria for Class II Ground Water (SPLP);

☐ Specific Ground Water Quality Criteria;

☐ Surface Water Quality Criteria;

☐ Maximum Contaminant Level (MCL) for State Regulated VOCs;

☐ Vapor Intrusion Ground Water Screening Level;

☐ Vapor Intrusion Residential Indoor Air Screening Level;

☐ Vapor Intrusion Nonresidential Indoor Air Screening Level;

☐ NJDEP Action Levels for Indoor Air;

☐ Vapor Intrusion NJ Department of Health Notification Levels;

☐ Extractable petroleum Hydrocarbons;

☐ Hexavalent Chromium Cleanup Criterion;

☐ Ecological Screening Criteria;

☐ Other: _____

Quality Control Requirements: *Indicate if your project will have Project specific field quality control samples. Check all that apply. Also specify if special QA/QC site requirements exist: i.e., QAPP.*

☐ Matrix Spike ☐ Matrix Spike Dup ☐ Trip Blank(s) ☐ Sample Duplicate

☐ Other Field QC

☐ Project QAPP (send appropriate section(s) to lab)

Data Deliverables Requirements: *Indicate the data deliverable type submitted:*

☐ Full deliverables ☐ Reduced deliverables ☐ Paper copy included

☐ Excel Spreadsheet ☐ HAZSITE Electronic Deliverables ☐ TO-15 Unit Conversion Table

☐ Other:_____

Expected Sampling Date(s): *Indicate expected number of sampling events or duration*

Total Number of Samples and Expected Sample Load Per Day: *(indicate number of each matrix if applicable)*

Sample Pick Up: ☐ Office(s) ☐ Site (address) ☐ Other

Special Instructions:

☐ Report TICs

☐ Project-specific analyte list

☐ Project-specific criteria

☐ Historically elevated concentrations of target analytes

☐ Multi-day sampling event

Notes:

There are standard target analytes for organic analysis. Refer to the methods for a list of specific compounds. If a contaminant of concern is not contained on the target list of a method, it is important that the laboratory know this prior to sampling. Prior notification will allow the laboratory to obtain standards and perform necessary instrument calibration to insure proper identification and quantification. ***If requesting non-routine compounds that have no regulatory criteria, indicate required reporting limit for each compound.***

ATTACHMENT 3

Table 13 QAPP Worksheet All Matrices – - SVOAs by USEPA SW-846 8270C
Measurement Performance Criteria & QC Samples

Data Quality Indicator (DQI)	QC Measure for Sampling (S), Analytical (A), or both (S&A)	QC Sample or Activity	Frequency / Number	QC Acceptance Limits (Measurement Performance Criteria)	Corrective Action (CA)	Person(s) Responsible for CA
Accuracy	A	DFTPP Tune	Every 12 hours	Method tune criteria based on criteria in Table 3 of USEPA-SW846 Method 8270C	Perform instrument maintenance; reanalyze until acceptable	Analyst
Accuracy	A	Initial Calibration (ICAL)	Initially and when CCAL fails	Minimum 5-standards; must contain all targets and lowest standard ≤ RL; *Full Scan*: RF ≥ 0.05 for SPCCs; %RSD ≤ 15% for all compounds except CCCs which must be ≤20% RSD or "r" ≥ 0.99; *SIM*: %RSD ≤ 20% or "r" ≥ 0.99 for all compounds	Recalibrate as required by method; analysis cannot proceed without a valid initial calibration	Analyst
Accuracy/ Sensitivity	A	Method Blank	1 per extraction batch of up to 20 field samples	Must be matrix matched; Phthalates < 5xRL; All other Targets < RL, surrogates in criteria	Reanalyze and, if necessary, re-extract. Report non-conformance in narrative; compounds present in blank should be flagged "B" in samples, if detected.	Analyst
Accuracy	A	Matrix Spike/ Matrix Spike Duplicate [Site-specific QC]	1 per ≤ 20 field per matrix samples	Must contain all target analytes, performed on Site field sample, % recovery 70-130% except for difficult analytes** which must exhibit % recovery between 20-160%	Evaluate LCS, unspiked sample, reanalyze, if necessary, and qualify data and narrate issue	Analyst/Data Reviewer

Table 13 QAPP Worksheet All Matrices – - SVOAs by USEPA SW-846 8270C
Measurement Performance Criteria & QC Samples

Data Quality Indicator (DQI)	QC Measure for Sampling (S), Analytical (A), or both (S&A)	QC Sample or Activity	Frequency / Number	QC Acceptance Limits (Measurement Performance Criteria)	Corrective Action (CA)	Person(s) Responsible for CA
Precision	A	Matrix Spike/ Matrix Spike Duplicate [Site-specific QC]	1 per ≤ 20 field per matrix samples	Must contain all target analytes, performed on Site field sample, % recovery criteria same as MS. RPDs ≤ 20% for waters and ≤ 30% for solids	Reanalyze, if necessary, qualify data and narrate issues of non-conformance	Analyst/Data Reviewer
Accuracy	A	Laboratory Control Sample (LCS)	1 per extraction batch of up to 20 samples	Must contain all target analytes, be matrix-matched; % Recovery 70-130% except for difficult analytes ** must exhibit percent recoveries between 20-160%.	Reanalyze, if necessary, qualify data and narrate issues of non-conformance	Analyst/Data Reviewer
Precision	A	Sample Duplicate (DUP)	1 per ≤ 20 field samples if an MS/MSD was not performed	Must be performed on a Site field sample. RPD ≤ 20% for waters and ≤ 30% for solids for results > 2x RL	Reanalyze, if necessary, qualify data and narrate issues of non-conformance	Analyst/Data Reviewer
Accuracy	A	Surrogates	Every sample including QC	Minimum of 3 base-neutral and 3 acid surrogates at RTs across GC run; for solids matrices must be between 30-130% for all compounds; for water matrices 30-130% for BN surrogates and 15-110% for Acid surrogates	Reanalyze, if necessary, qualify data	Analyst/Data Reviewer
Accuracy	A	Internal Standards (IS)	6 per sample including QC	Minimum of 6 IS , Areas 50-200% of the most recent CCV standard; RTs ±30 sec. from midpoint ICAL standard	Reanalyze and qualify data	Analyst/Data Reviewer
Accuracy	A	Continuing Calibration Verification (CCV)	1 every 12 hour prior to analysis of samples	Concentration level near mid-point of ICAL curve containing all target compounds; *Full Scan*: %D or %Drift ≤ 20% for CCCs and ≤ 30% for all other compounds *SIM*: %D or %Drift ≤ 30%	Recalibrate as required by method; note outliers in narrative.	Analyst

Table 13 QAPP Worksheet All Matrices – - SVOAs by USEPA SW-846 8270C
Measurement Performance Criteria & QC Samples

Data Quality Indicator (DQI)	QC Measure for Sampling (S), Analytical (A), or both (S&A)	QC Sample or Activity	Frequency / Number	QC Acceptance Limits (Measurement Performance Criteria)	Corrective Action (CA)	Person(s) Responsible for CA
Accuracy	A	Quantitation	Every sample	RL ≤results ≤ upper calibration range on a sample-specific basis; IS must be used; and average response factors or curve-statistics generated from the ICAL must be used for quantitation. Results reported between the MDL and RL qualified "J"	Perform dilution to bring analyte within linear range, qualify data	Analyst/Data Reviewer
Sensitivity	A	Reporting of Non-Detects	Every sample	Reported at the sample-specific RL which must be ≤ PRL	Potential data usability issue	Data Reviewer
Overall Precision & Representative-ness	S & A	Field Duplicate Samples [Site-specific QC]	1 per 20 field samples	RPD ≤ 30% for waters or RPD ≤ 50% for solids w/results > 2x RL; Professional judgment for results < 2xRL	Potential data usability issue	Data Reviewer
Accuracy (preservation)	S	Temperature Blank or other Cooler Temperature Reading	1 Temperature reading per cooler to be recorded upon receipt at lab	≤ 6° C; allow for < 2° C if samples intact sample preservation per SW-846 Chapter 4 Table 4-1	Potential data usability issue	Data Reviewer
Accuracy/ Sensitivity	S & A	Holding Time (HT)	Every field sample	Aqueous samples extracted within 7 days of collection; extract analyzed within 40 days of extraction. Soil/Sediment samples extracted within 14 days of collection; extract analyzed within 40 days of extraction. If Soil/Sediment samples are frozen, HT arrested and extraction HT continues when thawed. Solid samples can be maintained frozen for 1 year from collection.	Potential data usability issue	Data Reviewer
Accuracy/ Sensitivity	S	Equipment Blank	Not Required if using dedicated	Target analytes < RL	Potential data usability issue	Data Reviewer

Table 13 QAPP Worksheet All Matrices – - SVOAs by USEPA SW-846 8270C
Measurement Performance Criteria & QC Samples

Data Quality Indicator (DQI)	QC Measure for Sampling (S), Analytical (A), or both (S&A)	QC Sample or Activity	Frequency / Number	QC Acceptance Limits (Measurement Performance Criteria)	Corrective Action (CA)	Person(s) Responsible for CA
		[Site-specific QC]	sampling equipment. If performing decontamination of equipment, Collect 1 EB per 20 field samples collected by the same method			
Data Completeness	S & A	Calculate from valid/usable data collected	Not applicable	≥ 90% Overall	Potential data usability / data gap issue	Data Reviewer/ Investigator
Comparability	S & A	Based on Method (SOP) and QAPP/FSP protocols	Not applicable	Comparison between historical data for qualitative integrity of the data. Comparison between spatially similar samples.	Potential data usability issue	Data Reviewer/ Investigator

NOTES:

1. This table was prepared by NJDEP, January 2011 to be compliant with EPA Region 2 guidance and meet the data quality needs of the Department.

2. Semivolatile Organic Compound analyses via USEPA SW-846 Method 8270D (*Quality Assurance and Quality Control Requirements for SW-846 Method* 8270D *Semivolatile Organic Compounds by Gas Chromatography/Mass Spectroscopy [GC/MS])*. 8270D:

** Potentially "difficult" analytes include: benzenthiol, benzoic Acid, 2,4-dintrophenol, 3&4 – methylphenol, 4-nitrophenol, pentachlorophenol, phenol, aniline, aramite, A,A-dimethylphenethylamine, benzidine, benzaldehyde, benzyl Alcohol, caprolactam, chlorobenzilate, 3,3'-Dimethylbenzidine, 1,4-Dioxane, 7,12-Dimethylbenz(a)anthracene, Diallate, Dibenz(a,j)acridine, Diphenylamine, Disulfoton, p-(dimethylamine)azobenzene, decane, famphur, hexachlorocyclopentadiene, hexachloroethane, hexachlorophene, hexachloropropene, kepone, 4,4'-methylenebis(2-chloroaniline), methapyrilene, methyl methanesulfonate, methyl parathion, n-nitrosodimethylamine, 4-nitroquinoline-1-oxide, 2-Picoline, parathion, pentachloroethane, pentachlorobenzene, pentachloronitrobenzene, phorate, pronamide, pyridine, p-phenylenediamine, o-tricresyl phosphate and Tetraethyl. Please note that many of the surrogates may fall outside of the 15 – 110% range 2-Fluorophenol, Phenol-d5, 2,4,6-tribromophenol and terphenyl-d14.

ATTACHMENT 4